

MULTIPURPOSE APPLICATION USING RENEWABLE ENERGY (MARE)

HEIQAL AQIM BIN ZAMRI
NUR SYUHADA BINTI CHE OTHMAN
SITI NURUL AFIQAH BINTI KAMARUDIN

A project report submitted in partial fulfillment of the requirements for the award of the degree of Diploma of Electrical Engineering (Electronics / Telecommunications / Instrumentations / Computer)

Faculty of Electrical Engineering
Universiti Teknologi MARA

APRIL 2015

ACKNOWLEDGEMENT

Alhamdulillah all praises to Allah s.w.t, with His blessing and guidance that this project was successfully reached to the end of the final exhibition. All great thoughts came from Him Allah. We would like to express our sincere thankful to our honourable supervisor, Miss Nurul Nadia Binti Mohammad. Under her supervision and guidance, many aspects regarding to this project have been explored and with the knowledge, idea and support received from her, this project can be presented in the time given. Special thanks to the coordinator of this semester Final Year Project, the mastermind behind all the guidelines and instructions that help us to be in the right course. Also, thanks to all of our friends that have been helping us either directly or indirectly involved. Most importantly, we would like to thank our parents that give us motivation and financial support. Without these people this project was just an unmovable idea with hesitation.

ABSTRACT

In this project, many types of appliances can be charged using renewable energy. The Multipurpose Application using Renewable Energy (MARE) is a project that can function as an energy source or energy supply to multiple applications or to multiple equipments such as the cellular phones and laptops. The renewable energy used to help generate energy in MARE is solar energy that is collected from a few small sized solar panels that can generate up to 12V each. The voltage generated is then sent to the charger circuit that will send the charged energy to be supplied into the battery. The battery that is used is two lead acid batteries that will keep charge. When the charge reaches a certain level, the energy will be flown through to supply energy to respective appliances such as laptops and cellular phones.

TABLE OF CONTENTS

CHAPTER	CONTENTS	PAGE
	DECLARATION	ii
	ACKNOWLEDGEMENTS	iii
	ABSTRACT	iv
	ABSTRAK	v
	TABLE OF CONTENTS	vi-vii
	LIST OF TABLES	viii
	LIST OF FIGURES	ix
	LIST OF SYMBOLS	x
	LIST OF ABBREVIATIONS	xi
	LIST OF APPENDICES	xi
1	INTRODUCTION	
	1.1 Introduction	2
	1.2 Problem Statement	3
	1.3. Objectives	4
	1.4 Scope of Work	4
2	LITERATURE REVIEW	
	2.1 Components used	5
	2.1.1 Renewable Energy	5
	2.1.2 Solar Energy	6
	2.1.3 Charger Circuit	6
	2.1.4 Battery	7
	2.1.5 Transistor	7
	2.1.6 Diode	8

	2.1.7 Light Emitting Diode (LED)	8
	2.1.8 Resistor	9
	2.1.9 IC7805	9-10
	2.1.10 ICL200C	10-11
3	METHODOLOGY	
	3.1 Flow Chart Design	12-13
	3.2 Block Diagram	13
	3.3 Circuit Design	14
	3.3.1 Battery Charger Circuit	14
	3.3.2 Application Circuit	15
	3.3.3 Combined Circuit	15
	3.4 Circuit Tested on Breadboard	16
	3.5 Overall Troubleshooting	17
	3.6 PCB Layout	18
4	RESULTS AND DISCUSSION	
	4.1 Result and Discussion	19-21
5	CONCLUSIONS	
	5.1 Conclusion	22
	REFERENCES	23
	Appendices A – G	24-79